REMARKS

In response to the final Office Action mailed June 7, 2007, Applicants respectfully request the Examiner to reconsider the above-captioned application in view of the foregoing amendments and the following remarks.

Summary of the Office Action

In the June 7, 2007 final Office Action, Claims 1, 10-14 and 17-31 stand rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. Further, Claims 1, 10-14 and 17-31 stand rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In addition, Claims 24-31 are objected to under 37 C.F.R 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim.

Summary of the Amendment

Upon entry of the present Amendment, Applicants will have amended Claims 1, 12, and 21. Further, Applicants will have canceled Claims 22-31. Finally, Applicants will have submitted new Claims 32-38 for consideration. Therefore, Claims 1, 10-14, 17-21, and 32-38 currently remain pending in the application. Please note that in the amendments to the specification and claims, deletions are indicated by strikethrough (e.g. ~~deletion~~) and additions to the claims are underlined (e.g. addition).

Traversal of Rejection under 35 U.S.C. § 112, First Paragraph

Applicants respectfully traverse the rejection of Claims 1, 10-14, and 17-21 under Section 112, first paragraph, as failing to comply with the written description requirement.

The Examiner indicated that he could find no support for the claimed limitation that the wavelength is selected so as to be coincident with the aggregates. Applicants have amended independent Claim 1 to recite, *inter alia*, that the laser beam has a "wavelength selected so as to be absorbed by the aggregates, wherein the actual laser absorption of the aggregates is larger than that of the gas." Applicants respectfully submit that this recited language of independent Claim 1

finds support in the Specification at least on page 12, lines 10-11 (disclosing that "**the actual laser absorption of particles is much larger than that of the gas**" (emphasis added)). Applicants additionally note that Claim 1 has also been amended, *inter alia*, to recite "deriving a laser beam incidence position where the aggregates begin to form and thereby, the effect of the laser beam on the aggregates can be maximized in the flame." Applicants respectfully submit that this recited language of Claim 1 finds support in the Specification at least on page 11, lines 1-3 (disclosing that "In order to maximize the effect of a CO2 laser beam, it is necessary to know changes in terms of size or morphology with a change in the flame temperature and then to derive the proper incidence position of a laser beam.").

Applicants have also amended independent Claims 12 and 21 to recite, *inter alia*, that the laser beam has a "wavelength that coincides with an ***absorption wavelength*** of said aggregates such that more of the laser is absorbed by said aggregates than is absorbed by said gas." Emphasis added. Applicants respectfully submit that this recited language of independent Claims 12 and 21 finds support in the Specification on page 6, lines 1-2 (indicating that in an embodiment, "the wavelength of the laser beam coincides with the main absorption wavelength band of the particles generated in the flame"); on page 7, line 27-page 8, line 1 (indicating that "if a laser beam having a wavelength close to the range of main absorption wavelengths of produced particles is irradiated with an appropriate power level, the temperature of the particle rapidly increases so that the small-sized aggregates completely coalesce to be turned into small-sized spherical particles 6'of about 5 to 10 nm. That is to say, fine spherical particles are produced."); on page 15, lines 23-25 (indicating that if "the absorption wavelength of produced particles coincide with or is close to the frequency of the irradiated laser beam, the effect of manufacturing fine particles can be considerably increased by low power laser incidence"); and finally, on page 12, lines 10-11 (disclosing that "**the actual laser absorption of particles is much larger than that of the gas**" (emphasis added)). Additionally, at page 13, lines 7-8, the specification discloses that "primary particles constituting **the aggregates absorb the CO_2 laser beam and then are sintered to produce small spherical particles**" (emphasis added).

Claims 1, 10-14, and 17-21 also stand rejected under Section 112, first paragraph, based on the recitation that "the laser beam is generally absorbed by said aggregates but not with the gas." In order to expedite the prosecution of the present Application, Applicants have amended

these claims to remove this language. Therefore, Applicants respectfully submit that these other grounds of rejection are now moot. Accordingly, Applicants respectfully request that the rejection of Claims 1, 10-14, and 17-21 under Section 112, first paragraph be withdrawn.

Traversal of Rejection under 35 U.S.C. § 112, Second Paragraph

Applicants now respectfully address the rejection of Claims 1, 10-14, and 17-21 under Section 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The Examiner indicated that the recitation in the claims that the laser beam is "selected," would suggest that a "nebulous mental step [is] conducted prior to the manipulative steps of the claimed process." *See* Office Action, page 4. Applicants respectfully traverse the present rejection. Applicants respectfully submit that the laser beam is absorbed at least in part, by the aggregates. The recitation of the phrase "selected so as to be absorbed by the aggregates" is not be unclear with regard to the meaning of the term "selected." In embodiments of the method, the laser beam is irradiated onto the aggregates to facilitate the sintering of the aggregate. This can only be accomplished if the laser beam has properties that allow it to be absorbed by the aggregates. As discussed in the Specification, laser beams can be absorbed by the aggregates if, for example, "the wavelength of the laser beam coincides with the main absorption wavelength band of the particles generated in the flame" (Specification, page 6, lines 1-2); if the "laser beam [has] a wavelength close to the range of main absorption wavelengths of produced particles is irradiated with an appropriate power level" (*See id.* at page 7, line 27-page 8, line 1); and if "the absorption wavelength of produced particles coincide with or is close to the frequency of the irradiated laser beam" (*See id.* at page 15, lines 23-25). Accordingly, Applicants respectfully submit that the term "selected" used in Claim 1 is not unclear in meaning or scope because it merely refers to the use of a laser beam having the necessary properties for being absorbed by the aggregates.

However, in order to expedite prosecution of the present Application, Applicants have amended Claims 12 and 21 to remove the term "selected." In its place, Applicants have amended the "irradiating" steps of each of these claims to include the concepts previously recited in the

rejected "selecting" step portions of these claims. Therefore, Applicants respectfully request that this ground of rejection be withdrawn.

The Examiner also indicated that the previous absorption limitations were indefinite because whereas they required the laser to not be absorbed by the gas, there was a 40 degree increase in temperature of the gas, as recited in Claims 25, 27, 29, and 31. *Id.* Applicants have canceled Claims 22-31 in order to expedite the prosecution of the present Application. Therefore, Applicants respectfully request that this ground of rejection be withdrawn.

The Examiner further indicated that it was unclear what is meant by a wavelength being "coincident" with aggregates. *Id.* Applicants respectfully submit that such language is not believed to be unclear to one of skill in the art. Nevertheless, in order to expedite prosecution, and to develop clearer claims, Applicants have amended Claims 12 and 21 to recite, *inter alia*, that the "laser beam has a wavelength that coincides with an ***absorption wavelength*** of said aggregates" (emphasis added). Applicants believe that such language more clearly describes this feature. Therefore, Applicants respectfully request that this ground of rejection be withdrawn.

Finally, the Examiner also objected to the use of the term "generally absorbed." Again, in order to expedite prosecution, Applicants have removed this term from the claims. Therefore, Applicants respectfully request that the Examiner withdraw his rejection of Claims 1, 10-14, and 17-21 under Section 112, second paragraph.

Claim Objections

Applicants note that the Examiner also objected to Claims 24, 26, 28, and 30 as being of improper dependent form. By this amendment, Applicants have canceled these claims to expedite prosecution, and therefore submit that this objection is now moot.

New Claims 32-38

Applicants also submit new Claims 32-38 for consideration. These claims depend from independent Claims 12 and 21 and should be allowable for at least the reason that this claim depends from allowable base claims. Claim 32 draws support from the Specification at page 10, lines 5-16. Claim 33 draws support from the Specification at page 5, lines 24-31; page 13, lines

6-8; and page 17, line 31-page 18, line 5. Claim 34 draws support from the Specification at page 6, lines 1-2; and page 7, line 27-page 8, line 1.

Claims 35 and 37, which refer to directing the laser beam to a location where aggregates begin to form, are fully supported by the Specification. Firstly, Applicants would like to point out that the term "aggregates" includes particles connected together in chains. *See* Specification, page 3, lines 10-11 (explaining that "as shown in FIG. 2B, ***particles*** are connected to one another like linear ***chains*** to form ***aggregates***" (emphasis added)). Additionally, the Specification discloses an example, with reference to FIG. 1, using a hydrogen and oxygen burner, in which "vapor reactants sprayed into the flame 5 react with each other to form ***particle*** nuclei of about 0.5 nm near the end of the burner 4. These nuclei move along the flame 5 ***to form very small sized aggregates*** by collision. ***At this stage***, if a laser beam having a wavelength close to the range of the main absorption wavelengths of produced particles is irradiated with an appropriate power level, the temperature of the particle rapidly increases to that the ***small-sized aggregates*** completely coalesce to be turned into small-sized spherical particles . . ." (emphasis added). Finally, Applicants submit that the Specification sufficiently discloses methods of measuring temperatures and particle sizes that one of ordinary skill in the art fully understands how to direct a laser to a position in the flame where aggregates begin to form.

Claims 36 and 38 recite that "the wavelength of the laser coincides with an absorption wavelength of said aggregates such that the laser causes a greater increase in a temperature of said aggregates than an increase in a temperature of said gas." These claims are clearly supported by page 12, lines 12-13, which disclose "[l]aser beam incidence into particles results in a sharp increase in the particle temperature compared to in the gas temperature."

Applicants therefore respectfully request that the Examiner indicate allowance of these claims.

Conclusion

Applicants note that no rejections were set forth by the Examiner under Sections 102 or 103 in the June 7, 2007 Office Action. Nevertheless, Applicants respectfully reiterate Applicants comments in their response to the Final Office Action dated November 27, 2006. Applicants submit that the present Claims are patentable over Kamijo and other cited references because

they fail to disclose, teach, or otherwise suggest the features recited in Claims 1, 12, and 21. Applicants respectfully submit that the above rejections have been overcome and that the present application is now in condition for allowance. Therefore, Applicants respectfully request that the Examiner indicate allowance of Claims 1, 10-14, 17-21, and 32-38. Accordingly, early issuance of a Notice of Allowance is most earnestly solicited.

Applicants respectfully submit that the claims are in condition for allowance in view of the above remarks. Any remarks in support of patentability of one claim, however, should not be imputed to any other claim, even if similar terminology is used. Additionally, any remarks referring to only a portion of a claim should not be understood to base patentability on that portion; rather, patentability must rest on each claim taken as a whole. Applicants respectfully traverse each of the Examiner's rejections and each of the Examiner's assertions regarding what the prior art shows or teaches, even if not expressly discussed herein. Although amendments have been made, no acquiescence or estoppel is or should be implied thereby. Rather, the amendments are made only to expedite prosecution of the present application, and without prejudice to presentation or assertion, in the future, of claims on the subject matter affected thereby. Applicants also have not presented arguments concerning whether the applied references can be properly combined in view of, among other things, the clearly missing elements noted above, and Applicants reserve the right to later contest whether a proper motivation and suggestion exists to combine these references.

The undersigned has made a good faith effort to respond to all of the rejections in the case and to place the claims in condition for immediate allowance. Nevertheless, if any undeveloped issues remain or if any issues require clarification, the Examiner is respectfully requested to call Applicants' attorney in order to resolve such issue promptly.

Please charge any additional fees, including any fees for additional extension of time, or credit overpayment to Deposit Account No. 11-1410.

Respectfully submitted,

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